No. 789,816. PATENTED MAY 16, 1905.

C. E. NUTTING.

TAKE-UP MECHANISM FOR LOOMS.

APPLICATION FILED JULY 25, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

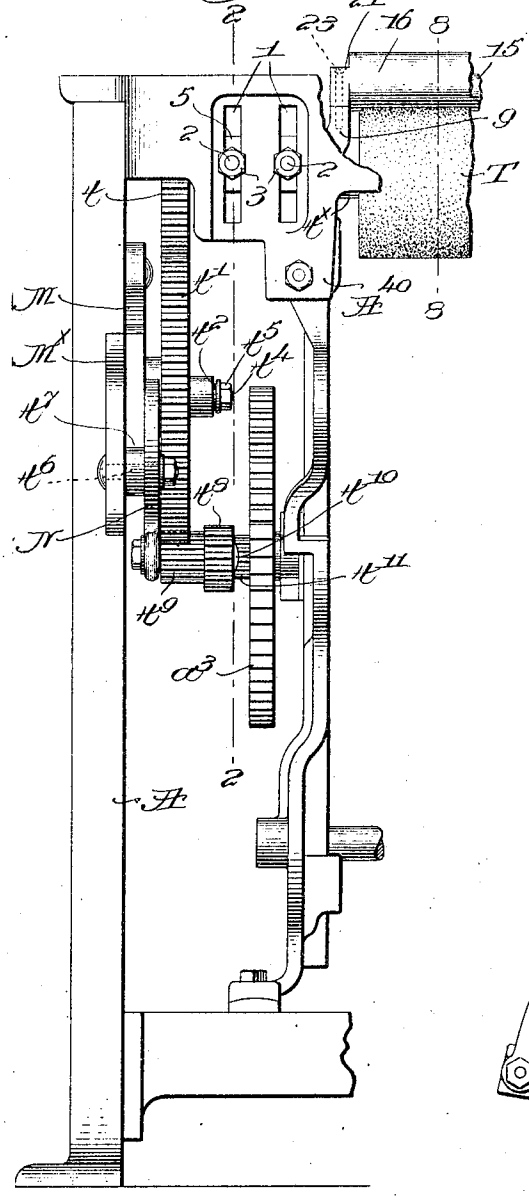
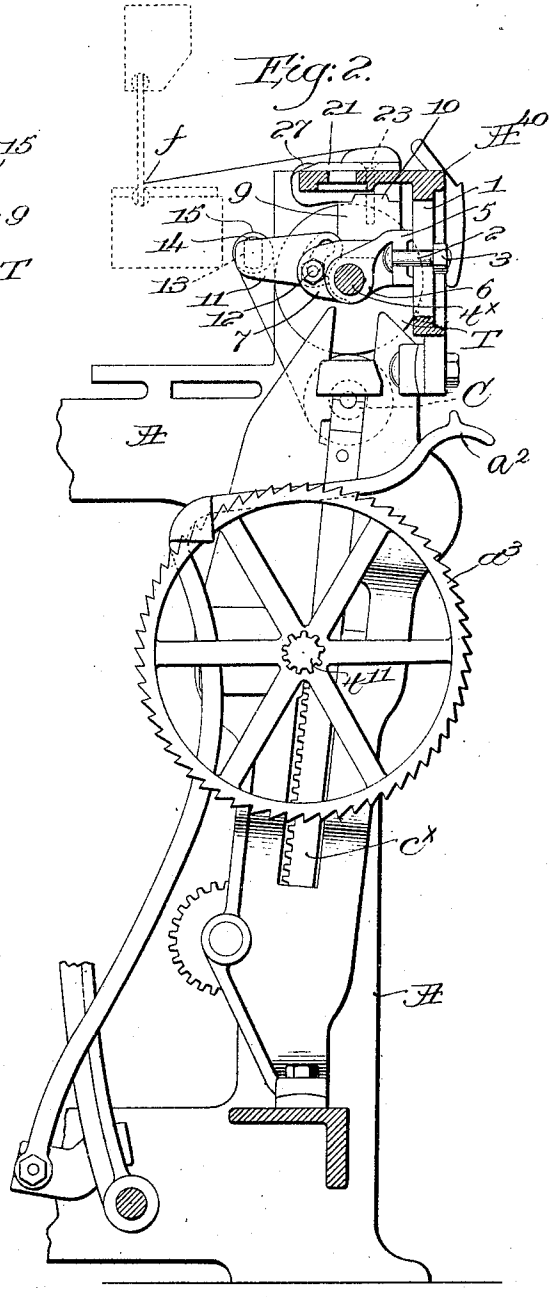


Fig. 2.



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2 SHEETS—SHEET 2.

Fig: 4.

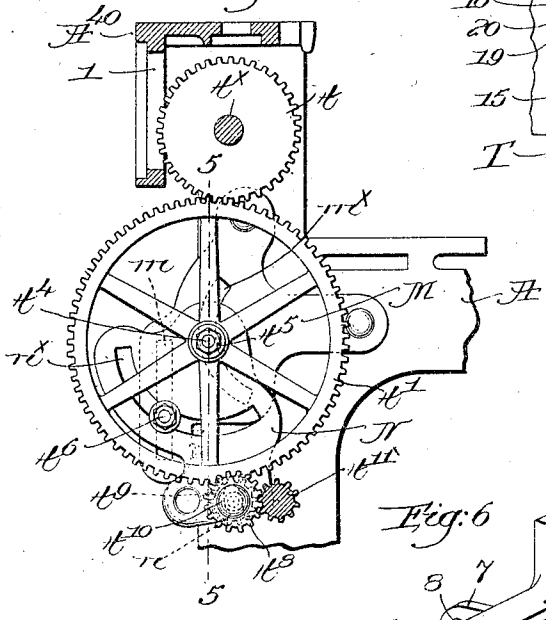


Fig: 3.

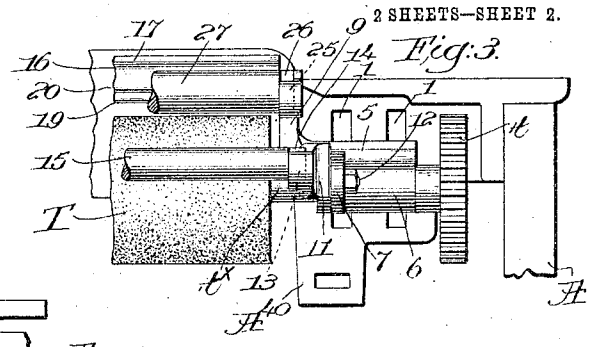


Fig: 5.

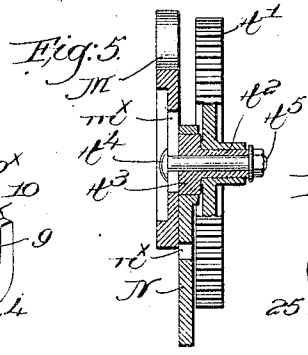


Fig: 6.

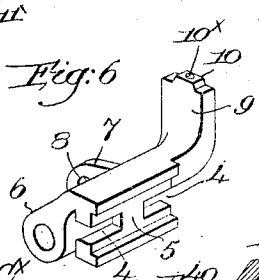


Fig: 7.

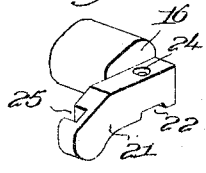


Fig: 8.

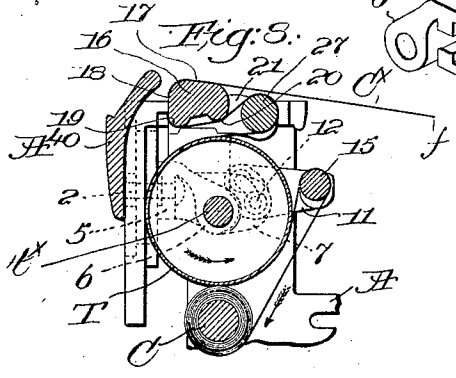


Fig: 9.

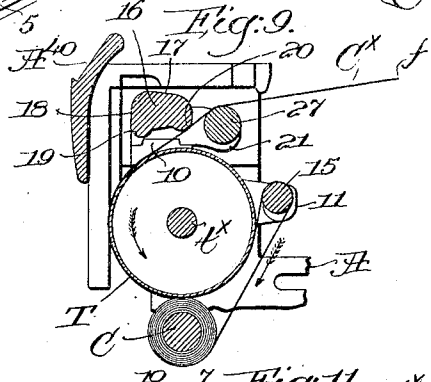


Fig: 10.

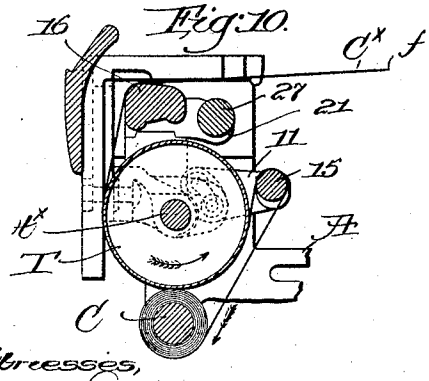
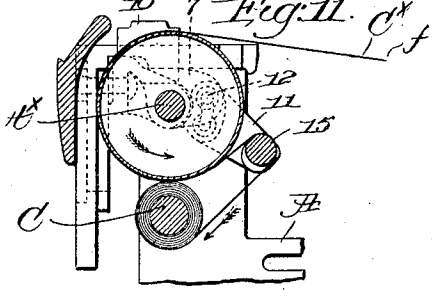


Fig: 11.



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No. 789,816. Patented May 16, 1905.

UNITED STATES PATENT OFFICE.

CHARLES E. NUTTING, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 789,816, dated May 16, 1905.

Application filed July 25, 1904. Serial No. 217,908.

To all whom it may concern:

Be it known that I, CHARLES E. NUTTING, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Take-Up Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

In the so-called "high-roll take-up" mechanism the cloth passes directly from the fell to and part way around the take-up or "sand" roll, as it is sometimes termed, this arrangement permitting a very large roll of cloth to be wound.

The take-up roll in the low-roll type of mechanism is located lower down in the loom, the cloth passing thereto from the fell in a different manner.

The several advantages attendant upon each type and also some of the objections thereto are set forth at considerable length in United States Patent No. 743,584, dated November 10, 1903, to which reference may be had, such patent disclosing a structure which may be changed readily from the low-roll to the high-roll type of take-up when desired.

A high-roll take-up mechanism is shown in United States Patent No. 643,284, and in practice it has been found that in weaving certain light goods the sawing action of the cloth over the sharp points on the surface of the high take-up roll is apt to cut the threads in the cloth and damage the latter to a greater or less extent. It has been found necessary, therefore, when weaving such cloth to provide means which will prevent the sawing movement of the cloth, while preserving the advantageous features of the high take-up roll.

The ordinary loom of commerce is provided with means which are interposed between the fell and the take-up roll to prevent such sawing movement of the cloth, but so located that the take-up roll must be placed at some distance below the breast-beam, thereby very materially restricting the size of the roll of cloth which can be wound.

My present invention has for its object the construction of a novel form of high-roll take-up mechanism so arranged that by means of friction or supporting members the sawing action of the cloth over the take-up roll is eliminated and not only is the desired length of cloth provided between the fell and the take-up roll, but several modifications in the path of the cloth can be used, including the direct passage of the cloth from the fell to the roll, when the cloth is of a character to make it desirable. The take-up roll is also adjustable, so that the filling is caused to be beaten in toward the top, center, or bottom of the woven cloth in order to impart the required surface or finish thereto.

The various novel features of my invention will be fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a partial front elevation of the take-up mechanism of a loom embodying my present invention. Fig. 2 is a transverse sectional detail thereof on the line 2 2, Fig. 1, looking toward the right. Fig. 3 is a rear elevation of a portion of the take-up roll and some of the adjacent parts looking at Fig. 2 toward the right. Fig. 4 is an inner side view of a portion of the train of gearing intermediate the take-up roll and the actuating-ratchet to be hereinafter referred to. Fig. 5 is a vertical section on the line 5 5, Fig. 4. Fig. 6 is a perspective detail of one of the supporting-brackets which is adjustably attached to the breast-beam and which has a bearing for the journal of the take-up roll. Fig. 7 is a similar view of one end of the removable cloth-support and the connected part which is detachably secured to the bracket shown in Fig. 6. Fig. 8 is a cross-sectional detail taken on the line 8 8, Fig. 1, looking to the left, to show more clearly the direction of travel of the cloth from the fell to the take-up roll and roll of cloth, the arrangement corresponding to that illustrated in Figs. 1, 2, and 3. Fig. 9 is a similar section, but showing the parts differently adjusted to provide a shorter length of cloth between the fell and

the take-up roll and also adjusted to change the inclination of the cloth from the fell. Fig. 10 is a like view showing yet another adjustment of the parts with the take-up roll lowered and a different inclination of the cloth; and Fig. 11 is a section on the line 8 8, Fig. 1, showing the parts adjusted for the direct passage of the cloth from the fell to the take-up roll, the latter being shown in its highest position.

The loom side A, take-up pawl a^2, pawl-carrier a', ratchet a^3, with which the pawl coöperates, the cloth roll or bar C, having its journals mounted in downwardly-movable supports $c^\times$, Fig. 2, and the take-up or sand roll T, having a pinion t on the take-up-roll shaft $t^\times$ and mounted above the cloth-roll C, are substantially as in Patent No. 643,284, except that herein the take-up roll is vertically adjustable, as will be described.

The gear t meshes with a large gear t', Figs. 1, 4, and 5, having its hub rotatably mounted on a tubular boss t^2, Fig. 5, provided with an enlarged circular base t^3, the boss being clamped rigidly to a plate M by a stud-bolt t^4 and nut t^5, the plate being fastened to the loom side and having a segmental slot $m^\times$, Fig. 4, through which the bolt passes.

Inasmuch as the take-up roll is vertically adjustable, as will be explained hereinafter, it is necessary to raise or lower the gear t' to maintain it in mesh with gear t when the take-up roll is adjusted, and this is provided for by the adjustability of the stud-bolt t^4 in the slot $m^\times$.

The enlarged base t^3 passes easily through a hole in a change-gear-supporting member or plate N, so that the latter can be adjusted angularly, a clamping-bolt t^6 passing through a segmental slot $n^\times$ in plate N and a vertical slot m in the offset part $M^\times$ of plate M, a collar t^7, Fig. 1, through which the bolt t^6 extends, being interposed between part $M^\times$ and the plate N.

The change-gear t^8 has an attached pinion t^9 to mesh with the gear t', said pinion in all cases having the same number of teeth, while the teeth of the change-gear vary—a construction well known to those skilled in the art.

A radial slot n (see dotted lines, Fig. 4) receives a stud t^{10}, on which the change-gear t^8 is mounted, radial adjustment of the stud being made in order that the change-gear may mesh properly with the pinion t^{11}, secured to the ratchet a^3.

Variation in the diameter of the change-gear makes it necessary to swing the member N about its fulcrum t^3 in one direction or the other, while the distance between the centers of pinion t^9 and gear t' is maintained substantially constant. The adjustment of the latter gear to accommodate vertical adjustment of the take-up roll carries with it the bodily-vertical adjustment of the change-gear-supporting member N, as the stud-bolt t^4 provides for both adjustments.

The arrangement of the angularly-adjustable member N and the change-gear sustained thereby is similar to that shown and described in United States Patent No. 730,404; but therein the take-up roll is non-adjustable and the vertical adjustment of member N is unnecessary.

Referring to Figs. 1 and 2, the downturned ends of the breast-beam casting A^{40} are provided with upright slots 1 to receive headed bolts 2, provided at their outer ends with clamping-nuts 3, the bolts passing through horizontal notches 4 in the part 5 of a casting, (shown separately in Fig. 6,) one of these castings being vertically adjustably mounted at each end of the breast-beam. Each casting has a horizontal sleeve-bearing 6, in which the adjacent journal $t^\times$ of the take-up roll is rotatably mounted, so that by adjusting the castings by means of the slots 1 and bolts 2 the vertical position of the take-up roll is changed. A vertical ear 7, having a hole 8, projects rearwardly from each casting, and the inner end of the latter is upturned at 9 and provided with a preferably bevel-ended seat 10. (Clearly shown in Fig. 6.) Short arms 11 are bolted to the ears 7 by means of clamping-bolts 12 passed through the hole 8, the arms having two bolt-holes, so that the position of the arms may be changed, as shown in Figs. 8 and 11, each arm having at its rear end an upright seat 13 for the correspondingly-shaped lugs 14 of a bar or rod 15.

As shown in Figs. 2 and 8 to 11, inclusive, the bar or cloth-guide 15 is located behind the take-up roll, and it may be adjusted to a position above or below the center thereof, as may be desirable or necessary, and when set such cloth-guide 15 will partake of any change in the vertical position of the take-up roll. A cloth-support is herein shown as an elongated metal bar 16, preferably a casting having a flattened upper face 17 and front face 18 with well-rounded corners, the cross-sectional shape of the support or bar 16 being very clearly shown in Figs. 8 to 10, inclusive, the longitudinal lower front and back edges 19 and 20 being also rounded, as shown. The surface of this support or bar is polished to present no irregularities or projections upon which the cloth might catch or tear, and at its ends it is formed with integral feet 21, which extend rearwardly therefrom at right angles thereto. As most clearly shown in Fig. 7, each foot has a recess 22 to receive the seat 10, and the feet are detachably secured thereto by retaining-screws 23, passing through holes 24 in the feet and screwed into threaded holes $10^\times$ in the tops of the seats. The extremities of the feet 21 have upright seats 25 formed therein in their inner faces to receive the reduced ends 26 of a removable

supplementary cloth-support, shown as a cylindrical bar or roll 27, which is supported behind the main support 16 and also above the take-up roll, as is the said main support. The supplementary support may be and preferably is made of metal polished to present a smooth surface, over which the cloth passes.

In Figs. 2, 9 to 11, inclusive, the beating-up point or fell is indicated at *f*. The adjustment of the parts in Figs. 2 and 9 is such that the cloth $C^{\times}$ passes from the fell forward over the flattened top and front faces 17 and 18 of the main support 16, thence under the same, crossing the rounded edges 19 and 20, and up over and down behind the supplementary support 27 and passes thence to the take-up roll T. A double or reversed loop is thus formed in the cloth between the fell and take-up roll, so that such a length of cloth is interposed as will absorb and dissipate the back-and-forth or sawing movement of the cloth before it reaches the take-up roll. The cloth thus rests quietly on the latter and is held with proper firmness to effect the proper tension for taking up, but without any sawing or rubbing action over the surface of such roll. Passing around and under the roll the cloth is then carried over and around the cloth-guide 15 and thence to the cloth-roll C, upon which it is wound in usual manner, a large portion of the surface of the take-up roll being in engagement with the cloth.

In making provision for the double looping of the cloth it will be seen that while the main and supplementary cloth-supports are located above the take-up roll the latter is lowered very slightly from its highest position. (Shown in Fig. 11.) There is consequently no material diminution of the size of the roll of cloth which can be wound.

If it is desired to change the inclination of the cloth from the fell forward to vary the finish or surface thereof, the take-up roll can be properly adjusted, the main and supplementary cloth-support maintaining the same position with relation to the roll.

Referring to Fig. 9, the roll and cloth-supports have been lowered somewhat, and the cloth now passes from the fell over the supplementary support 27 and under the rear corner 20 of the main support to the take-up roll, a shorter length of cloth being interposed between the roll and the fell. The inclination of the cloth from the fell forward is different also; but it will be manifest that by raising the roll T and the cloth-supports the inclination can be changed without varying the length of cloth between the fell and the roll. In Fig. 10 the vertical adjustment of the parts is substantially the same; but the cloth leads direct from the fell to and over the main support and thence directly to the take-up roll. A considerably smaller portion of the take-up roll is by this arrangement brought into engagement with the cloth, as will be clear from an inspection of the drawings.

Should it be desired to lead the cloth direct to the roll from the fell, as will be the case in weaving some kinds of cloth, it is only necessary for the weaver to loosen the two bolts 23 and lift off bodily the main and supplementary cloth-supports, as shown in Fig. 1, and the take-up roll can be elevated to its maximum height or to a lower position, as may be desired.

Changes in the position of the take-up roll require an adjustment of the gear *t* and the change-gear and its supporting member N; but such changes are easily and quickly made by means of the construction heretofore described.

A great variety of changes in the lead of the cloth, the length thereof between fell and take-up roll, and inclination of the cloth forward of the fell can be secured by the construction herein shown and described.

My invention is not restricted to the precise construction and arrangement herein shown, as the same may be varied or rearranged in various particulars by those skilled in the art without departing from the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In take-up mechanism for looms, a take-up roll, a cloth-roll upon which the cloth is wound, a main and a supplementary cloth-support, both located above the take-up roll, and separated from each other, to sustain the cloth between the fell and said roll, removable means rigidly connected with the main support to retain both of said supports in operative position, and means to adjust vertically and simultaneously the take-up roll and said main and supplementary cloth-supports.

2. In take-up mechanism for looms, a take-up roll, vertically-adjustable bearings therefor, a cloth-roll below said take-up roll and upon which the cloth is wound, a main and a supplementary cloth-support, and connecting means therefor detachably mounted on the bearings of and directly above the take-up roll, the cloth being adapted to pass around either or both of said supports before contacting with the take-up roll, adjustment of the take-up roll effecting simultaneous adjustment of the said connecting means.

3. In take-up mechanism for looms, a take-up roll, a non-rotatable cloth-support removably mounted above it and having a polished surface presenting flat top and front faces and rounded longitudinal edges, and a detachable, supplementary support, located behind and below the said non-rotatable support, the cloth passing over and around both supports before contacting with the take-up roll.

4. In take-up mechanism for looms, a take-up roll, a metallic cloth-support removably mounted above the take-up roll and having integral, rearwardly-extended arms at its ends, a supplementary support mounted in said arms, the cloth passing directly to the main support, around and under it back to and over the supplementary support, and thence to the take-up roll, to form and sustain a double loop in the cloth and increase the length thereof between the fell and the take-up roll.

5. In take-up mechanism for looms, a take-up roll, a removable cloth-supporting bar directly above and in close proximity thereto, a supplementary cloth-supporting bar above said roll and behind the main supporting-bar, and detachable independently of the latter, the cloth passing from the fell over and under the main bar and then over and under the supplementary bar, and thence forward to the take-up roll, and means to adjust vertically and simultaneously both of said bars and the take-up roll.

6. In take-up mechanism for looms, a take-up roll, two parallel cloth-supporting bars, or members mounted directly above and in close proximity to the take-up roll, and removable simultaneously, and means to permit removal of one of said bars independently of the other bar.

7. In take-up mechanism for looms, a take-up roll, removable cloth-supporting means mounted above and in proximity to said roll, and means to simultaneously adjust the roll and cloth-supporting means vertically.

8. In take-up mechanism for looms, a take-up roll, vertically-adjustable bearings therefor, each bearing having an upturned seat above the roll, a main cloth-support, a supplementary cloth-support carried thereby and behind it, and means to detachably secure the main cloth-support upon the seats.

9. In take-up mechanism for looms, a take-up roll, vertically-adjustable bearings therefor, actuating means for said take-up roll, including a change-gear, a vertically and angularly adjustable support for the latter, and independent means to maintain said support in vertical and angular adjustment.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. NUTTING.

Witnesses:

GEORGE OTIS DRAPER,

FRANK E. DODGE, Jr.